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Ultrafine particles –
cooperation with environ-
mental and health policy

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Issue 5 / October 2012

5TH NEWSLETTER/ GLASILO ŠT.5

TOPIC 1/TEMA 1

AIR POLLUTION AND METEOROLOGICAL DATA, LOCATION OF THE MEASUREMENT SITES/PODATKI O
ONESNAŽENOSTI ZRAKA IN METEOROLOŠKI PODATKI, LOKACIJA MERILNIH MEST

TOPIC 2/TEMA 2

EPIDEMIOLOGICAL AND SOCI-DEMOGRAPHIC DATA/EPIDEMIOLOŠKI IN SOCIODEMOGRAFSKI PODATKI

TOPIC 1/TEMA 1

AIR POLLUTION AND METEOROLOGICAL DATA, LOCATION OF THE MEASUREMENT SITES/PODATKI O ONESNAŽENOSTI ZRAKA IN
METEOROLOŠKI PODATKI, LOKACIJA MERILNIH MEST

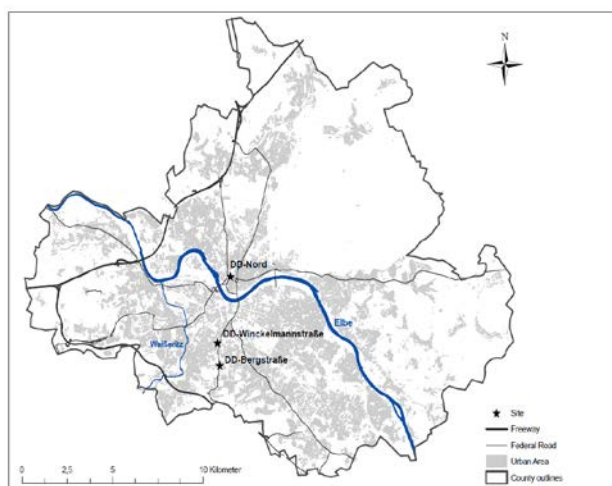
Data on air pollution and meteorology are collected in five European cities: Dresden and Augsburg (Germany), Prague (Czech Republic), Ljubljana (Slovenia) and Chernivtsi (Ukraine). All of the measurement sites are located in urban background. These areas are representative for a large part of the urban population. Beside the determination of ultrafine particle concentration it is important to measure the concentrations of other air pollutants (mainly gaseous) and meteorological parameters in parallel as the ultrafine particle formation can be influenced by these parameters. Hence, various gaseous

Meritve in zbiranje podatkov o onesnaženosti zraka in meteorološki podatki se izvajajo v petih evropskih mestih: Dresden in Augsburg (Nemčija), Praga (Češka), Ljubljana (Slovenija) in Černivci (Ukrajina). Vse merilne postaje se nahajajo v urbanem okolju, kar omogoča reprezentativnost za velik del mestnega prebivalstva. Pomembno je, da se vzporedno z določanjem koncentracije ultrafinih delcev merijo tudi koncentracije drugih onesnaževal (predvsem plini) in meteorološki parametri, saj lahko le ti vplivajo na nastanek ultrafinih delcev. Zato se v merilnih postajah merijo onesnaževala kot so žveplov dioksid,

pollutants such as sulphur dioxide, nitrogen monoxide and nitrogen dioxide as well as meteorological variables such as air temperature, relative humidity and barometric pressure are measured at the monitoring stations in addition. In the following the different measurement stations will be introduced briefly.

Dresden (Saxon State Agency for Environment, Agriculture and Geology - LfULG), Germany

The station DD-Winckelmannstraße in Dresden is located at an urban background site near student dormitories, parking areas, multi-storey buildings and a small park. The station is integrated in the air quality monitoring network of Saxony. Beside the ultrafine particle determination many gaseous and meteorological parameters are measured at this station.



Picture 1: Location of the measurement site DD-Winckelmannstraße in Dresden, Germany

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ogljikov monoksid in dušikov dioksid in meteorološke spremenljivke kot je temperatura zraka, relativna vlažnost in zračni tlak. V nadaljevanju so na kratko predstavljene merilne postaje vključene v projekt.

Dresden (Saški državni urad za okolje, kmetijstvo in geologijo), Nemčija

Merilna postaja DD-Winckelmannstraße v Dresdnu se nahaja v urbanem okolju v bližini študentskih domov, parkirišč, večnadstropnih stavb in manjšega parka. Postaja je vključena v mrežo za spremljanje kakovosti zraka Saške. Poleg določanja ultrafinih delcev se v postaji izvajajo tudi meritve plinastih onesnaževal in meteoroloških parametrov.



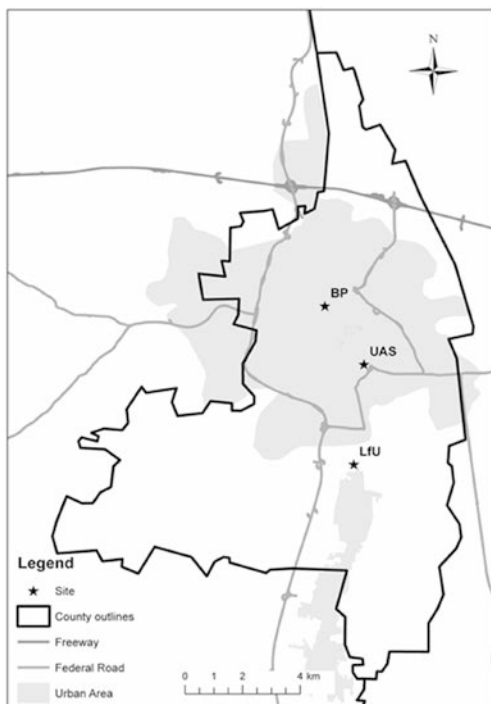
Slika 2: Merilna postaja DD-Winckelmannstraße v Dresdnu, Nemčija

© Susanne Bastian

Augsburg, Germany

The aerosol monitoring station in Augsburg is located at an urban background setting on the campus of the University of Applied Sciences (UAS). This location is approximately 1 km away from the city centre in a south-east direction. Within a radius of 100 m the site is surrounded by campus buildings, a tram depot and a small company. The nearest main road is in the north-east at a distance of around 120 m.

At the UAS site no gaseous parameters are measured on a permanent basis. Hence, in Augsburg gaseous data will be obtained from two monitoring stations of the Bavarian Air Monitoring Network (LÜB: Lufthygienisches Landesüberwachungssystem Bayern) operated by the Bavarian Environment Agency (Landesamt für Umweltschutz: LfU). The LfU site is located approximately 4 km south of the city centre on the premises of LfU, and the second site (BP) is located at Bourges-Platz, about 1 km north of the city centre.



Picture 3: Location of measurement sites in Augsburg. Aerosol measurement station UAS (University of Applied Sciences) and two network stations BP (Bourges-Platz) and LfU (Landesamt für Umweltschutz).

Augsburg, Nemčija

Merilna postaja se nahaja v urbanem okolju v kampusu Univerze za uporabne znanosti Augsburg. Ta lokacija je oddaljena približno 1 km od centra mesta v jugovzhodni smeri. V radiusu 100 metrov je merilno mesto obdano s stavbami kampusa, remizo in majhnim podjetjem. Najbližja glavna cesta je na severovzhodu oddaljena okoli 120 metrov.

Na tem merilnem mestu se plinasta onesnaževala ne merijo stalno, zato se bodo v Augsburgu ti podatki pridobivali iz dveh merilnih postaj Bavske mreže za nadzor zraka (LÜB: Lufthygienisches Landesüberwachungssystem Bayern), ki jo vodi Bavarska agencija za okolje (Landesamt für Umweltschutz: LfU). Eno merilno mesto te mreže se nahaja približno 4 km južno od mestnega središča v prostorih Bavske agencije za okolje, drugo pa se nahaja na Bourges-Platzu, približno 1 km severno od središča mesta.



Slika 4: Merilna postaja v kampusu Univerze v Augsburgu © Thomas Kusch

Prague, Czech Hydrometeorological Institute (CHMI), Czech Republic

The Automatic Monitoring Station (AMS) Suchdol represents the outskirts-city measuring point in Prague, which is situated on the hill in the north-west of Prague above the river Vltava. The station is integrated in the national air quality monitoring network of the Czech Republic and is located at an urban background site in the vicinity of the buildings of scientific institutions. Beside the ultrafine particle determination many gaseous and meteorological parameters are measured at this station.



Picture 5: Location of the Automatic Monitoring Station (AMS) Prague-Suchdol, Czech Republic

Ljubljana (Institute of Public Health Celje), Slovenia

The monitoring site in Ljubljana is also located at the urban background setting on the location of the Agricultural Institute of Slovenia. The conditions in the most populated area of the city municipality are very well represented by the monitoring site. Nearby is the Institute building, multi-storey residential buildings, kindergarten and elementary school. The nearest main road is about 50 m away, nearby is also a railway station. Only ultrafine particles will be measured here, other parameters (gaseous pollutants, concentration of airborne particles, meteorological parameters) will be obtained from the measuring station, which is located at the Agency of the Republic of Slovenia. Location of the measuring station of the Agency is 650 m away from the station for measuring ultrafine particles.

Praga, Češka

Avtomatska merilna postaja (AMS) Suchdol se nahaja na hribu nad reko Vltavo v predmestju, severozahodno od Prage. Postaja je vključena v nacionalno mrežo za spremljanje kakovosti zraka Češke in se nahaja v urbanem okolju v bližini znanstvenih institucij. Poleg ultrafinih delcev se v tej postaji merijo tudi plinasta onesnaževala in meteorološki parametri.

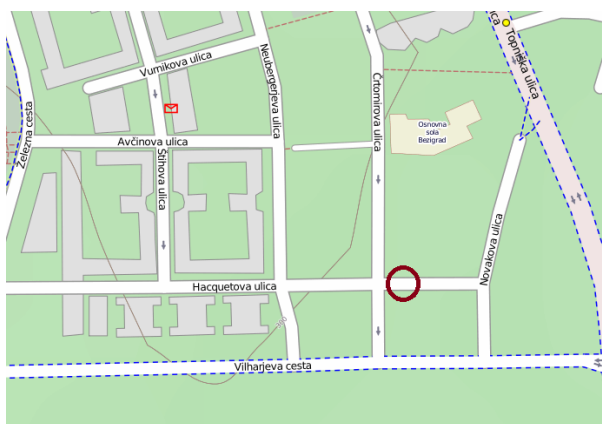


Slika 6: Avtomatska merilna postaja v Pragi, Češka

© J.Šilhavý

Ljubljana, Slovenija

Merilna postaja v Ljubljani se prav tako nahaja v urbanem okolju in sicer na lokaciji na območju Kmetijskega inštituta Slovenije. Merilno mesto zelo dobro predstavlja razmere naseljenega območja mestne občine. V bližnji okolici se nahajajo zgradba Inštituta, večnadstropne stanovanjske zgradbe, vrtec in osnovna šola. Glavna cesta je oddaljena približno 50 m, v bližini je tudi železniška postaja. Tu se bodo merile le koncentracije ultrafinih delcev, ostali parametri (plinasta onesnaževala, koncentracija delcev v zraku, meteorološki parametri) bodo pridobljeni iz merilne postaje, ki se nahaja na lokaciji Agencije Republike Slovenije za okolje. Lokacija merilne postaje Agencije Republike Slovenije za okolje je od merilne postaje za merjenje ultrafinih delcev oddaljena približno 650 m.



Picture 7: Location of the air quality monitoring station in Ljubljana, Slovenia

© OpenStreetMap



Slika 8: Merilna postaja v Ljubljani

© Matevž Gobec

Chernivtsi (Chernivtsi region center of Hydrometeorology – CRCH), Ukraine

The measurement site Fedkovycha Street, 30 represents an inner-city measuring point in Chernivtsi, which is situated in the valley between two hills. The station is located at an urban background site near the stadium, parking areas, houses and a park. Beside the ultrafine particle determination some gaseous parameters are measured at this station.

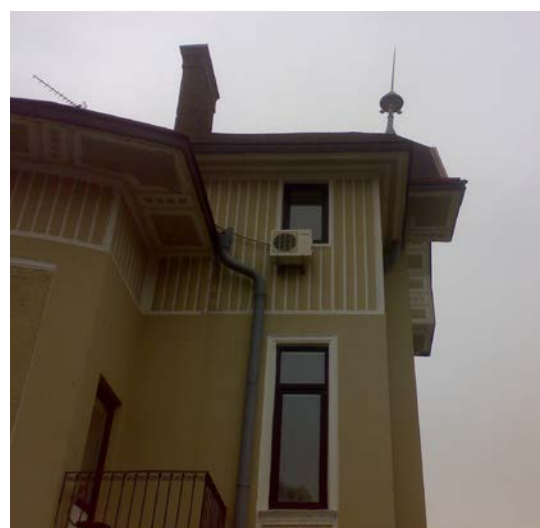
Černivci, Ukrajina

Merilna postaja Fedkovycha Street, 30 predstavlja merilno mesto v središču mesta v Černivcih, ki se nahaja v dolini med dvema hriboma. Postaja se nahaja v urbanem okolju v bližini stadiona, parkirišča, hiš in parka. Poleg določanja ultrafinih delcev se izvajajo tudi meritve plinastih onesnaževal in meteoroloških parametrov.



Picture 9: Location of the air quality monitoring station in Chernivtsi, Ukraine

© OpenStreetMap



Slika 10: Merilna postaja v Černivcih, Ukrajina

© Bogdan Mykhalchuk

TOPIC 2/TEMA 2

EPIDEMIOLOGICAL AND SOCIO-DEMOGRAPHIC DATA /EPIDEMIOLOŠKI IN SOCIODEMOGRAFSKI PODATKI

Epidemiological and socio-demographic data will be collected using official statistics. The anticipated data will have different temporal and spatial resolutions. Some are available on a daily basis whereas others only on a yearly basis. Spatial data are available for postal code areas, local districts or the whole city. The objective of the analyses is to investigate hospital admissions and mortality on a daily basis. However, socio-demographic data have a relatively low temporal and spatial resolution and are mostly available only on a monthly or yearly basis.

The two main databases to get information on (cause-specific) morbidity and mortality are hospital admission statistics and death statistics. Data will be available one year later. Hence, data of the year 2012 can be analysed at the end of 2013. The main outcomes to be investigated are all-cause hospital admissions and all-cause mortality. Moreover, cause-specific health outcomes will be investigated as well. In that context, the project will focus on cardiovascular and respiratory hospital admissions and mortality, respectively. Furthermore, in case the number of cases is sufficient, sub-categories such as ischemic causes of hospital admissions or mortality will be examined, too. Moreover, if sample size and data protection allows, stratified analyses will be conducted considering age, gender and region. The main diagnosis and cause of death respectively are available based on the International Statistical Classification of Diseases and Related Health Problems (ICD-10).

With regard to hospital admissions all cities will provide information on gender, age and main diagnosis of the respective patient. However, there are also differences in the data availability. For example, in Dresden, Augsburg and Prague additional information on the type of hospital or hospital department can be gained. Regarding mortality, in all cities gender, age, the cause of death and the date of death are available.

Epidemiološki in sociodemografski podatki bodo zbrani z uporabo uradne statistike. Pričakovani podatki bodo imeli različne časovne in prostorske ločljivosti. Nekateri so na voljo za vsak dan, drugi pa le enkrat na leto. Prostorski podatki so na voljo za območja poštne kode, lokalnih okolišev in za celotno mesto. Cilj raziskave je, da se raziščejo sprejemi v bolnišnico in umrljivost na dnevni osnovi. Vendar pa imajo sociodemografski podatki relativno nizko časovno in prostorsko ločljivost in so večinoma na voljo le na mesečni ali letni ravni.

Dve glavni bazi podatkov, za pridobitev informacij o (specifičnemu vzroku) obolevnosti in smrtnosti, sta statistiki o hospitalizaciji in smrti. Ti podatki bodo na voljo z enoletnim zamikom. Zato se bodo podatki iz leta 2012 lahko analizirali na koncu leta 2013. V prvi vrsti je potrebno raziskati vse nespecifične vzroke za hospitalizacijo in smrt. Prav tako se morajo analizirati hospitalizacije in primeri smrti zaradi kardiovaskularnih in respiratornih obolenj in, če bo število primerov zadostno, se bodo raziskale tudi podkategorije kot npr. hospitalizacija ali smrt zaradi ishemijske. Če bosta velikost vzorca in varstvo podatkov to dopuščala, bo izvedena stratificirana statistična analiza z upoštevanjem dejavnikov kot so starost, spol in regija. Za pridobitev podatkov o glavni diagnozi oz. vzroku smrti bo uporabljena Mednarodna klasifikacija bolezni in zdravstvenih problemov (MKB-10).

V zvezi s sprejemom v bolnišnico bodo vsa mesta posredovala informacije o spolu, starosti in glavno diagnozo bolnika. Vendar pa obstajajo tudi razlike v razpoložljivosti podatkov. Na primer, v Dresdnu, Augsburgu in Pragi so na voljo tudi dodatne informacije o vrsti bolnišnice ali bolnišničnega oddelka. Glede umrljivosti so v vseh mestih dostopni podatki o spolu, starosti, vzroku smrti in datumu smrti.

However, there are also differences concerning the provided information. Information on family status are provided only by Dresden, Augsburg and Prague. Moreover, date of birth is allocated only by Dresden, Prague and Chernivtsi.

Data protection will be considered as regulated by the respective federal state laws. Data have to be anonymized to the extent to which data can only be re-anonymized with an out of scale effort. The data have to be analysed within the rooms of the respective research centers.

Obstajajo pa tudi razlike glede obsega posredovanih informacij. Informacije o družinskem položaju posredujejo le Dresden, Augsburg in Praga. Poleg tega je datum rojstva razpoložljiv le v Dresdnu, Pragi in Černivcih.

Varstvo podatkov bo upoštevano kot je to urejeno z ustreznimi zveznimi državnimi zakoni. Podatki morajo biti anonimizirani do stopnje pri kateri je reanonimizacija skoraj nemogoča. Podatki se morajo analizirati v prostorih ustreznih raziskovalnih centrov.

For further information on the project's objectives, please refer to our previous newsletters or visit the project website www.ufireg-central.eu.

Dodatne informacije o vsebini projekta, so vam na voljo v naših prejšnjih glasilih, kot tudi na spletni strani projekta www.ufireg-central.eu.

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